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EXAMINER

BROOKE, MICHAEL S

ART UNIT	PAPER NUMBER
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2853

DATE MAILED: 01/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/089,698

Applicant(s)

SPITZ ET AL.

Examiner

Michael S. Brooke

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-22 and 25-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 32-39 is/are allowed.
- 6) ☒ Claim(s) 1-22 and 25-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 June 1998 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Appeal Brief***

1. In response to the decision issued by the Board of Appeals on 08/20/03, a new grounds of rejection is issued.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al. (5,552,816) in view of Deshpande et al. (4,831,390).

Oda et al. teaches (Fig. 1) an ink jet cartridge comprising a substrate holder (17) for mounting one or more head tips, having nozzles and heaters (col. 8:32-35). It is the Examiner's position that the head tip is a semi-conductor substrate. If the Applicant contests this position, the Examiner takes Official Notice that it is well known in the ink jet art to provide heaters on a semiconductor substrate. The substrate holder has a top surface containing one or more locator wells for accommodating the semi-conductor substrates. Each well has a well base and a plurality of walls. The well base has at least one ink feed slot formed therein. The holder includes one or more chambers (14) on an opposing side of the substrate holder from the locator wells and is in fluid

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communication with a corresponding locator well. The holder also has side walls formed along a perimeter thereof. An ink reservoir body (11) is integrally attached to the holder. While Oda et al. is silent as to the composition of the heat sink, the Examiner takes Official Notice that it is well known to form a heat sink out of metal.

Oda et al. teaches the claimed invention with the exception of the side walls having fins.

Deshpande et al. teaches a thermal ink jet printer comprising a heater chip (30) that is mounted on a heat sink (44). The heat sink may have two different geometries: one geometry having fins and another geometry not having fins (col. 4:42-49).

Deshpande et al. teaches that the geometry having fins is smaller than the geometry that does not have fins. Thus, the use of fins allows for the overall size of the heat sink to be reduced, while maintaining the same level of heat dissipation as the larger, finless heat sink.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided the heat sink of Oda et al. with fins along the sides of the heat sink, in order to reduce the overall size of the heat sink, and thus the print head, while maintaining the same level of heat dissipation, as taught by Deshpande et al.

Furthermore, Deshpande teaches that a heat sink with fins is an art recognized equivalent to a heat sink without fins, for the purpose of dissipating heat ink in a thermal ink jet print head. Because these two different heat sink geometries were art recognized equivalents at the time the invention was made, one of ordinary skill in the

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ink jet art would have found it obvious to have substituted a heat sink with fins for the finless heat sink of Oda et al., in order to dissipate the heat generated by the heater chip.

4. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al. (5,552,816) in view of Deshpande et al. (4,831,390), as applied to claims 1, 4, 5 and 10-12 above, and further in view of Fukuda et al. (5,066,964).

Oda et al., as modified, teaches the claimed invention with the exception of the substrate holder being made of aluminum.

Fukuda et al. discloses an ink jet print head comprising a heat sink (1) made of aluminum for the purpose of cooling a heat generating substrate (10) (col. 6, lines 10-18). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have made the heat sink of Oda et al. from aluminum for the purpose of dissipating heat as taught by Fukuda et al.

5. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al. (5,552,816) in view of Deshpande et al. (4,831,390), as applied to claims 1 and 10-12 above, and further in view of Ikeda et al. (4,686,544).

Oda et al. teaches the claimed invention with the exception of a coating of silicon dioxide, and the silicon dioxide having a thickness of between 0.1 to 2.5 microns.

Ikeda et al. teaches a thermal ink jet print head having a protective coating of silicon dioxide (213) formed over the heater resistor (201), in a thickness of 2.0 microns

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(col. 8:54-55). A material, such as silicon dioxide protects the heater from the corrosive effects of the ink, while providing excellent thermal conductivity and heat resistance (col. 5:3-25).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided Oda et al., as modified, with a silicon dioxide layer having a thickness of between, 0.1 to 2.5 microns, in order to protect the heater from the corrosive effects of the ink, while providing excellent thermal conductivity and heat resistance, as taught by Ikeda et al.

6. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al. (5,552,816) in view of Deshpande et al. (4,831,390), as applied to claims 1 and 10-12 above, and further in view of Wenzel et al. (5,426,458).

Oda et al., as modified, teaches the claimed invention with the exception of a polyxylylene coating having a thickness of about 0.1 to 10 microns.

Wenzel et al. discloses an ink jet print head having a coating of polyxylylene with a thickness of between 0.5 and 5 microns for the purpose of forming a corrosion resistant layer. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in Oda et al., as modified, a polyxylylene layer having a thickness of between 0.1 to 10 microns for the purpose of providing corrosion resistance.

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7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al. (5,552,816) in view of Deshpande et al. (4,831,390), as applied to claims 1 and 10-12 above, and further in view of Drake et al. (5,079,189).

Oda et al. as modified, discloses the claimed invention with the exception of the substrate holder comprising a material containing carbon fibers or graphite.

Drake et al. discloses a semi-conductor substrate having a heat sink (12.1) made of graphite for the purpose of cooling the substrate (col., 5, lines 16-18).

Therefore, it have been obvious to one having ordinary skill in the art at the time the invention was made to have provided in Oda et al., as modified, a substrate holder comprising graphite for the purpose of cooling the substrate as taught by Drake et al.

8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al. (5,552,816) in view of Deshpande et al. (4,831,390), as applied to claims 1, 4, 5 and 10-12 above, and further in view of Cook (5,834,689).

Oda et al., as modified, discloses the claimed invention with the exception of the substrate holder comprising a metal-ceramic composite.

Cook discloses a heat sink comprising a composite of a metal matrix and a ceramic for the purpose of improving the thermal conductivity of the heat sink so as to reduce its size.

It would have been recognized in the art of Oda et al. that reducing the size of a heat sink would be desirable so as to reduce the overall size of the print head.

Therefore, it have been obvious to one having ordinary skill in the art at the time the

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invention was made to have provided in Oda et al., as modified, a substrate holder comprising a metal-ceramic composite for the purpose improving the thermal conductivity of the substrate holder, so as to reduce the size of the print head.

9. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al. (5,552,816) in view of Deshpande et al. (4,831,390), as applied to claims 1, 4, 5 and 10-12 above, and further in view of Ta et al. (4,755,836).

Oda et al., as modified, teaches the claimed invention with the exception of one or more carriage positioning devices adjacent one of the sidewalls.

Ta et al. teaches an ink jet cartridge (Fig. 10) having a plurality of lands (78, 78a, 80, 80a, 82 and 82a), which are positioned adjacent to the sidewalls of the cartridge for the purpose of aligning the cartridge in the carriage.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in Oda et al., as modified, carriage positioning devices for the purpose of aligning the cartridge in the carriage as taught by Ta et al.

10. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al. (4,942,408) in view of Deshpande et al. (4,831,390) and Ta et al. (4,755,836).

Oda et al. teaches (Fig. 1) an ink jet cartridge comprising a substrate holder (17) for mounting one of more head tips, having nozzles and heaters (col. 8:32-35). It is the Examiner's position that the head tip is a semi-conductor substrate. If the Applicant contests this position, the Examiner takes Official Notice that it is well known in the ink



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jet art to provide heaters on a semiconductor substrate. The substrate holder has a top surface containing one or more locator wells for accommodating the semi-conductor substrates. Each well has a well base and a plurality of walls. The well base has at least one ink feed slot formed therein. The holder includes one or more chambers (14) on an opposing side of the substrate holder from the locator wells and is in fluid communication with a corresponding locator well. The holder also has sidewalls formed along a perimeter thereof. An ink reservoir body (11) is integrally attached to the holder. While Oda et al. is silent as to the composition of the heat sink, the Examiner takes Official Notice that it is well known to form a heat sink out of metal.

Oda et al. teaches the claimed invention with the exception of the sidewalls having fins.

Deshpande et al. teaches a thermal ink jet printer comprising a heater chip (30) that is mounted on a heat sink (44). The heat sink may have two different geometries: one geometry having fins and another geometry not having fins (col. 4:42-49).

Deshpande et al. teaches that the geometry having fins is smaller than the geometry that does not have fins. Thus, the use of fins allows for the overall size of the heat sink to be reduced, while maintaining the same level of heat dissipation as the larger, finless heat sink.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided the heat sink of Oda et al. with fins along the sides of the heat sink, in order to reduce the overall size of the heat sink, and thus the

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print head, while maintaining the same level of heat dissipation, as taught by Deshpande et al.

Furthermore, Deshpande teaches that a heat sink with fins is an art recognized equivalent to a heat sink without fins for the purpose of dissipating heat ink in a thermal ink jet print head. Because these two different heat sink geometries were art recognized equivalents at the time the invention was made, one of ordinary skill in the ink jet art would have found it obvious to have substituted a heat sink with fins for the finless heat sink of Oda et al., in order to dissipate the heat generated by the heater chip.

Ta et al. teaches an ink jet cartridge (Fig. 10) having a plurality of lands (78, 78a, 80, 80a, 82 and 82a), which are positioned adjacent to the sidewalls of the cartridge for the purpose of aligning the cartridge in the carriage.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in Oda et al., as modified, carriage positioning devices for the purpose of aligning the cartridge in the carriage as taught by Ta et al.

11. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al. (5,552,816) in view of Deshpande et al. (4,831,390) and Ta et al. (4,755,836), as applied to claim 14, and further in view of Fukuda et al. (5,066,964).

Oda et al., as modified, teaches the claimed invention with the exception of the substrate holder being made of aluminum.

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Fukuda et al. discloses an ink jet print head comprising a heat sink (1) made of aluminum for the purpose of cooling a heat generating substrate (10) (col. 6, lines 10-18). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have made the heat sink of Oda et al., from aluminum for the purpose of dissipating heat as taught by Fukuda et al.

12. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al. (5,552,816) in view of Deshpande et al. (4,831,390), as applied to claim 14 above, and further in view of Ikeda et al. (4,686,544).

Oda et al. teaches the claimed invention with the exception of a coating of silicon dioxide, and the silicon dioxide having a thickness of between 0.1 to 2.5 microns.

Ikeda et al. teaches a thermal ink jet print head having a protective coating of silicon dioxide (213) formed over the heater resistor (201), in a thickness of 2.0 microns (col. 8:54-55). A material, such as silicon dioxide protects the heater from the corrosive effects of the ink, while providing excellent thermal conductivity and heat resistance (col. 5:3-25).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided Oda et al., as modified, with a silicon dioxide layer having a thickness of between, 0.1 to 2.5 microns, in order to protect the heater from the corrosive effects of the ink, while providing excellent thermal conductivity and heat resistance, as taught by Ikeda et al.

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13. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al. (5,552,816) in view of Deshpande et al. (4,831,390) and Ta et al. (4,755,836), as applied to claim 14 and further in view of Wenzel et al. (5,426,458).

Oda et al., as modified, teaches the claimed invention with the exception of a polyxylylene coating having a thickness of about 0.1 to 10 microns.

Wenzel et al. discloses an ink jet print head having a coating of polyxylylene with a thickness of between 0.5 and 5 microns for the purpose of forming a corrosion resistant layer. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in Oda et al., as modified, a polyxylylene layer having a thickness of between 0.1 to 10 microns for the purpose of providing corrosion resistance.

14. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al. (5,552,816) in view of Deshpande et al. (4,831,390) and Ta et al. (4,755,836), as applied to claim 14, and further in view of and further in view of Drake et al. (5,079,189).

Oda et al. as modified, discloses the claimed invention with the exception of the substrate holder comprising a material containing carbon fibers or graphite.

Drake et al. discloses a semi-conductor substrate having a heat sink (12.1) made of graphite for the purpose of cooling the substrate (col., 5, lines 16-18).

Therefore, it have been obvious to one having ordinary skill in the art at the time the invention was made to have provided in Oda et al., as modified, a substrate holder comprising graphite for the purpose of cooling the substrate as taught by Drake et al.

15. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al. (5,552,816) in view of Deshpande et al. (4,831,390) and Ta et al. (4,755,836), as applied to claim 14, and further in view of and further in view of Cook (5,834,689).

Oda et al., as modified, discloses the claimed invention with the exception of the substrate holder comprising a metal-ceramic composite.

Cook discloses a heat sink comprising a composite of a metal matrix and a ceramic for the purpose of improving the thermal conductivity of the heat sink so as to reduce its size.

It would have been recognized in the art of Oda et al. that reducing the size of a heat sink would be desirable so as to reduce the overall size of the print head.

Therefore, it have been obvious to one having ordinary skill in the art at the time the invention was made to have provided in Oda et al., as modified, a substrate holder comprising a metal-ceramic composite for the purpose improving the thermal conductivity of the substrate holder, so as to reduce the size of the print head.

The steps of the method of claims 14-22 are deemed to be rendered obvious in view of the functions of the structure in the combination discussed above.

16. Claims 25, 26 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al. (4,942,408) in view of Deshpande et al. (4,831,390), Ta et al. (4,755,836), Fukuda et al. (5,066,964) and Wong (5,084,713).

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Oda et al. teaches (Fig. 1) an ink jet cartridge comprising a substrate carrier (17) for mounting one of more head tips, having nozzles and heaters (col. 8:32-35). It is the Examiner's position that the head tip is a semi-conductor substrate. If the Applicant contests this position, the Examiner takes Official Notice that it is well known in the ink jet art to provide heaters on a semiconductor substrate. The substrate carrier has a top surface containing one or more locator wells for accommodating the semi-conductor substrates. Each well has a well base and a plurality of walls. The well base has at least one ink feed slot formed therein. The carrier includes one or more chambers (14) on an opposing side of the substrate carrier from the locator wells and is in fluid communication with a corresponding locator well. The carrier also has sidewalls formed along a perimeter thereof. An ink reservoir body (11) is integrally attached to the carrier. While Oda et al. is silent as to the composition of the heat sink, the Examiner takes Official Notice that it is well known to form a heat sink out of metal.

Oda et al. teaches the claimed invention with the exception of the sidewalls having fins, with the exception of at least two alignment devices and a plurality of slots for attaching the nosepiece to the reservoir and the metal being aluminum.

Deshpande et al. teaches a thermal ink jet printer comprising a heater chip (30) that is mounted on a heat sink (44). The heat sink may have two different geometries: one geometry having fins and another geometry not having fins (col. 4:42-49). Deshpande et al. teaches that the geometry having fins is smaller than the geometry that does not have fins. Thus, the use of fins allows for the overall size of the heat sink

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to be reduced, while maintaining the same level of heat dissipation as the larger, finless heat sink.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided the heat sink of Oda et al. with fins along the sides of the heat sink, in order to reduce the overall size of the heat sink, and thus the print head, while maintaining the same level of heat dissipation, as taught by Deshpande et al.

Furthermore, Deshpande teaches that a heat sink with fins is an art recognized equivalent to a heat sink without fins for the purpose of dissipating heat in a thermal ink jet print head. Because these two different heat sink geometries were art recognized equivalents at the time the invention was made, one of ordinary skill in the ink jet art would have found it obvious to have substituted a heat sink with fins for the finless heat sink of Oda et al., in order to dissipate the heat generated by the heater chip.

Fukuda et al. discloses an ink jet print head comprising a heat sink (1) made of aluminum for the purpose of cooling a heat generating substrate (10) (col. 6, lines 10-18). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have made the heat sink of Oda et al., from aluminum for the purpose of dissipating heat as taught by Fukuda et al.

Wong discloses an ink jet print head comprising a substrate support panel (50) having a recess (48) for accommodating and cooling a semi-conductor substrate (12). As can be seen in Fig. 8, the support panel has a top surface and side walls which

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define a cylindrical first opening (100) which is located opposite the top surface. Plastic alignment pins are provided adjacent the side walls for attaching the panel to holes in a plastic ink cartridge (10), which is positioned adjacent to the support panel. In addition, alignment pins (98) are provided for the purpose of aligning the head to a carriage. It would have been obvious to one of ordinary skill in the art to provide the cylindrical first openings (100) around the perimeters of the sidewalls and the plastic alignment pins on the support panel, since it has been held that rearranging the parts of an invention involves only routine skill in the art. This would suggest to one of ordinary skill in the art to provide in Oda et al., as modified, slots along the perimeter of the sidewalls for the purpose of attaching the fluid block to the ink reservoir. Furthermore, it would have been obvious to one of ordinary skill in the art to make the carrier removable from the ink reservoir to allow replacement of the ink reservoir with necessitating the replacement of the carrier.

17. Claims 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al. (4,942,408) in view of Deshpande et al. (4,831,390), Ta et al. (4,755,836), Fukuda et al. (5,066,964) and Wong (5,084,713), as applied to claims 25, 26 and 31 above, and further in view of Ikeda et al. (4,686,544).

Oda et al. teaches the claimed invention with the exception of a coating of silicon dioxide, and the silicon dioxide having a thickness of between 0.1 to 2.5 microns.

Ikeda et al. teaches a thermal ink jet print head having a protective coating of silicon dioxide (213) formed over the heater resistor (201), in a thickness of 2.0 microns



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(col. 8:54-55). A material, such as silicon dioxide protects the heater from the corrosive effects of the ink, while providing excellent thermal conductivity and heat resistance (col. 5:3-25).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided Oda et al., as modified, with a silicon dioxide layer having a thickness of between, 0.1 to 2.5 microns, in order to protect the heater from the corrosive effects of the ink, while providing excellent thermal conductivity and heat resistance, as taught by Ikeda et al.

18. Claims 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al. (4,942,408) in view of Ta et al. (4,755,836), Fukuda et al. (5,066,964) and Wong (5,084,713), as applied to claims 25-28 and 31 above, and further in view of Wenzel et al. (5,426,458).

Oda et al., as modified, teaches the claimed invention with the exception of a polyxylylene coating having a thickness of about 0.1 to 10 microns.

Wenzel et al. discloses an ink jet print head having a coating of polyxylylene with a thickness of between 0.5 and 5 microns for the purpose of forming a corrosion resistant layer. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in Oda et al., as modified, a polyxylylene layer having a thickness of between 0.1 to 10 microns for the purpose of providing corrosion resistance.

***Allowable Subject Matter***

Claims 32-39 are allowed.

***Response to Arguments***

19. Applicant's arguments filed 12/23/03 have been fully considered but they are not persuasive.

Applicant's argument that the rejection is improper is not persuasive. The reopening of prosecution with authorized by the Group Director, as required in MPEP 12.14.04. Therefore, any allegations regarding the propriety of this rejection should be addressed directly to the Group Director, Howard Goldberg.

In response to Applicant's argument that the finned heat sink of Deshpande would have to be incorporated into the print structure of Oda, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

In Deshpande, a heat sink (44) is provided in thermal contact with the heater chip (30), in order to dissipate heat from the chip. Deshpande further teaches that providing fins on the heat sink allows the overall size of the heat sink to be reduced, by increasing the surface area of the heat sink (col. 4:42-46). The clear teaching of

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Deshpande is that using a heat sink with fins, in an ink et print head, allows the overall size of the heat sink to be reduced, thus reducing the overall size of the print head.

The Applicant clearly admits that the print head structure of Oda is analogous to the print head structure of Deshpande (see p. 3 of Applicant's response of 12/23/03).

The primary difference between the structure of Oda and the structure of Deshpande is the location of the heat sink. In Oda, the heat sink functions as the heater chip carrier, exactly as in the claimed invention. The only question is whether the combination of references provides motivation for adding fins to the heat sink. The answer is clearly, yes. The combination of references clearly teaches that adding fins to the heat sink of Oda would result in a reduction in the size of the heat sink and the overall size of the print head.

Applicant argues that the prior art combination suggests that a fin be placed on the head component (16). This is exactly the Examiner's argument and thus, the Applicant agrees with the Examiner. The fins should be added to the heat sink (17), which is part of head component (16). Since the Applicant apparently agrees with the Examiner, the Examiner is unclear as to why the Applicant keeps arguing that the prior art fails to teach the claimed invention.

The Applicant then argues that alternatively, a separate heat sink would have to be applied to the opposite side of the print head from the cartridge holder. The Examiner does not understand how the Applicant arrives at this conclusion. The teaching of Deshpande is to provide a heat sink, having fins, in thermal contact with the heater chip. Oda already has a heat sink (17) that is in thermal contact with the heater

chip (18). It is completely unclear as to why the Applicant thinks that Deshpande would teach adding another heat sink to Oda, when Oda already has a heat sink.

The Applicant then alleges that the only way for the combination of Oda and Deshpande to provide the claimed invention is to suggest that the fins be applied to the tank holder of either Oda or Deshpande. This argument is utterly without merit. Deshpande clearly teaches adding fins to the heat sink, not to a tank holder. Thus, the clear teaching of the prior art is to add the fins to the heat sink of Oda (17). In fact, throughout the Applicant's arguments, the Applicant never explains why the prior art combination fails to teach adding the fins to the heat sink of Oda.

Furthermore, the Applicant argues that in order to teach that claimed invention, the prior art would have to teach that the fins are applied to the tank holder. The Examiner does not understand the Applicants' reasoning. The claimed invention is directed to a substrate holder, having fins, which functions as a heat sink. The claimed invention is not directed to a tank holder having fins. The prior art teaches a finned substrate holder that functions as a heat sink, which is the same as the claimed invention. Thus, the prior art teaches the claimed invention.

Applicant further argues that the newly cited reference, Deshpande et al., is merely cumulative with the previously cited references. This argument is without merit. In the previous Board decision, the Board pointed out a specific deficiency with the prior art rejection. Deshpande was cited specifically to correct this deficiency. Seeing that Deshpande provides a teaching that was not presented in the previously cited prior art, Applicant's position that Deshpande is cumulative with the other prior art is untenable.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael S. Brooke whose telephone number is 703-305-0262. The examiner can normally be reached on M-F 5:30-2:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on 703 308-4896. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4900.

A handwritten signature in black ink, appearing to read "Michael S. Brooke". The signature is fluid and cursive, with the first name "Michael" and last name "Brooke" being clearly distinguishable.

Michael S. Brooke  
Examiner  
Art Unit 2853

MSB  
01/21/04